

Wheelchair Acceleration Limiter

by

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Users of electric wheelchairs at Highland View Hospital have objected to the sudden acceleration that accompanies starting because it causes the head and trunk to jerk backwards. In order to overcome this problem, the solid-state circuit shown in Figure 1 was designed and tested. Since we use the Everest and Jennings electric wheelchairs, the circuit was made especially to limit the rate of acceleration of these chairs.

Results have been gratifying, and we plan to make these devices available to all future electric wheelchair patients who are admitted to our Physical Medi-

cine & Rehabilitation Department.

Current from the wheelchair batteries is supplied to the motors through a silicon power transistor Q1, which does not conduct until capacitor C1 begins to charge. When the wheelchair is started, current and motor speed increase gradually over a period of time determined by the externally controlled potentiometer R5, and the capacitor C1. This time constant is adjustable from zero to a few seconds, so that the user has a wide choice of acceleration rates. When the control stick is operated in any desired direction, power is applied and capacitor C1 begins to charge. As the charge builds up, current flows gradually into the base of transistor Q1, and collector current also starts to flow through the transistor into the

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